

## ABSTRACT

The invention relates to an implantable device for therapeutic and diagnostic purposes, which is capable to detect the physical properties of the pulmonary tissue which depend from its density and their variations caused by a pathologic condition of the heart (heart failure, ischemia, arrhythmia), using one or more intrapulmonary catheters, provided with sensors, inserted in branches of the pulmonary artery. The catheters provided with sensors preferably use as sensors electrodes and the detected physical property, which depends by the density of the pulmonary tissue, is preferably the bioelectric impedance of the explored portion of lung. The same electrodes can be also used for monitoring of an electrocardiogram, without artefacts and interferences. The device can be used to guide and optimise the therapy of the heart disease made with electrostimulators and/or cardiac defibrillator and/or systems for the exhibition of drugs and/or for the drainage of the fluids accumulated in the body and/or for the circulatory assistance to the heart. The device comprises means for the communication with external devices by means of radio-frequency transmission. This invention constitutes a significative improvement in the state of the art of the implantable devices for the therapy and the diagnosis of the heart diseases, because it allows the measurement of the specific bioelectric impedance of the pulmonary tissue only, overcoming the drawbacks of the known systems, which by using surfaces electrodes placed upon the skin or electrodes placed inside of the heart cavities, give a measurement of the transthoracic impedance determined prevalently by the volume variations of the heart and great vessels and only partially of the contents of fluids in the pulmonary tissue.